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<sup>2</sup>  
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E04B 1/58; E04B 2/60

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Complete Specification      1977 PC 4966  
entitled (54) METAL WALL FRAME MEMBERS

Accompanied by a Provisional Specification

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1977  
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Related Art (56)	464948	(53544/73)	81.3, 78.9
	239217	(52393/59)	81.3, 74.5
	137148	(14374/47)	45.9, 45.4
	38586/63		81.3, 74.5, 78.9

The following statement is a full description of this invention, including the best method of performing it known to me :

The invention further provides a method of manufacture of studs according to the invention.

In order that the nature of the invention may be better understood a preferred form thereof is hereinafter described by way of example with reference to the accompanying drawing in which:

Figure 1 is a view in elevation of one end of a stud.

Figure 2 is a perspective view of the end of the stud, and

Figure 3 is a cross sectional view of a plate for use therewith.

The stud, the end of which is shown in Figure 1 is made preferably from sheet metal and consists of a web 10 and side walls 11 and may be roll-formed in a conventional manner the walls 11 making a right angle with the web 10.

The principal feature of the construction is the formation in each side wall 11 of the stud of a notch 12 that is substantially triangular in shape when seen in part elevation as in Figure 1 and consists of a sloping wall 13 and a wall 14 that is substantially parallel to the end of the stud, that is to say at right angles to the sides of the stud. A substantially semi-circular aperture 15 is cut in the web 10 at the end of the stud for reasons which are explained below. Apertures 16 may be formed in pairs along the length of the stud to accommodate tabs by means of which channel section metal noggins may be attached to the stud.

The end of the stud shown in Figure 1 is for use in conjunction with a plate such as that shown in cross-section in Figure 3. The plate is also of channel section produced by roll-forming and consists of a base 17 and side walls 18 in each of which is formed an internal projection 19 which is the counterpart of the notch 12 formed in each side wall of the stud.

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The present invention relates to metal wall frame members in the form of studs and plates from which a wall frame structure may be assembled.

There have been many proposals for the design of wall frame structures utilising steel channel section members and incorporating arrangements whereby the studs or upright members of the wall frame may be readily connected to the plates or horizontal members of the frame.

The present invention provides a configuration for the ends of a metal stud and a complementary configuration for the cross sectional shape of a plate member such that the manufacture of the stud is facilitated, the interconnection of a stud with a plate is simple and the resulting joint is particularly firm and stable.

The present invention consists in a stud for a wall frame construction the stud being made from sheet metal and being of channel section each side wall of the stud being shaped so as to have in it, spaced at a short distance from an end, a notch that is substantially triangular in cross section as seen in front elevation the notch being defined by an inwardly sloping portion of the side wall and a portion of the side wall at the end adjacent the end of the stud deformed to extend substantially at right angles to the general plane of the side wall of the stud.

The invention further consists in the combination of a stud as <sup>defined in the last</sup> <sup>paragraph</sup> preceding with a plate the plate being of channel section and each of the side walls being shaped so that in section the shape of the wall corresponds closely in shape with the notched portions of the stud, the stud being engaged with the plate so that the projecting portions in the side walls of the plate fit closely within the notches formed in the side walls of the stud.

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The end of the stud is engaged with a plate by inserting the end of the stud in the plate so as to make an angle with the axis thereof. The stud may then be located about a vertical axis to bring the web 10 parallel with the end of the plate. This has the effect of engaging the projection 19 in the notches 13, and in engaging the portion at the end of the stud beyond the wall 14 within the space between the web 17 of the plate and the projection 19, the whole of this space being filled by the stud with the end of the stud resting on the web of the plate.

A stiffening corrugation may be formed in the plate as shown in Figure 2 and the end of the stud is suitably formed to take account of this. Similar corrugations may be formed along the length of the stud.

The shaping of the end of the stud in the manner described has a number of specific advantages. Firstly when the end of the stud is engaged with the plate a particularly firm and stable connection is established quickly and easily by merely turning the stud in relation to the plate. The firmness of the connection is enhanced by the close embrace of the end of the stud by the walls of the plate.

A further advantage derived from the particular configuration used for the end of the stud arises from the fact that press tools may be developed to enable the notches to be formed in the sides of the stud at one operation. The stud may for example be produced in continuous lengths and at a point in the continuous length at which two studs join end to end a substantially oval shaped piece of metal is punched out of the web 10 the shape corresponding to two of the apertures 15 arranged face to face. Press tools are then applied to the walls of the ends of the joined studs to form four notches 13 in them simultaneously, the oval shaped aperture

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serving to permit flow of metal displaced by the reshaping of the walls of the stud necessitated by the formation of the notches 13. A strip of metal is then cut from between the ends of the two studs thus formed which serves to trim the ends of the studs and remove a portion of metal that has been deformed in the pressing operation.

The embodiment of the invention described above is given by way of example only as constituting a preferred form thereof within the scope of the invention defined broadly above.

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The claims defining the invention are as follows:-

1. A stud for a wall frame construction the stud being made from sheet metal and being of channel section each side wall of the stud being shaped so as to have in it, spaced at a short distance from an end, a notch that is <sup>substantially</sup> triangular in cross section as seen in front elevation the notch being defined by an inwardly sloping portion of the side wall and a portion of the side wall at the end adjacent the end of the stud deformed to extend substantially at right angles to the general plane of the side wall of the stud.

2. The combination of a stud as claimed in claim 1 with a plate the plate being of channel section and each of the side walls being shaped so that in section the shape of the wall corresponds closely in shape with the notched portions of the stud, the stud being engaged with the plate so that the projecting portions in the side walls of the plate fit closely within the notches formed in the side walls of the stud.

3. A stud as claimed in claim 1 when made by a method consisting of the steps of

- (a) applying press tools to the walls of a length of channel section material to form in each of the walls thereof a pair of said notches, said pairs of notches being spread apart along the length of material, the members of each said pair of notches being opposed,
- (b) severing a portion of metal from the <sup>material</sup> channel section, between said pairs

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of notches to form simultaneously the  
ends of two studs.

4. A stud substantially as described with reference  
to and as illustrated in Figures 1 and 2 of the accompanying  
drawings.

DATED this 9th day of May, 1978.

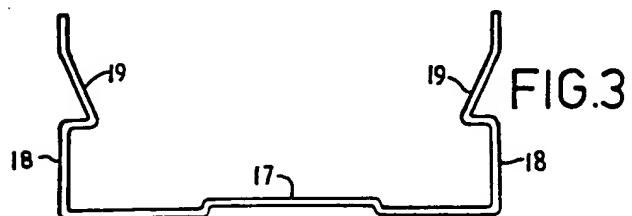
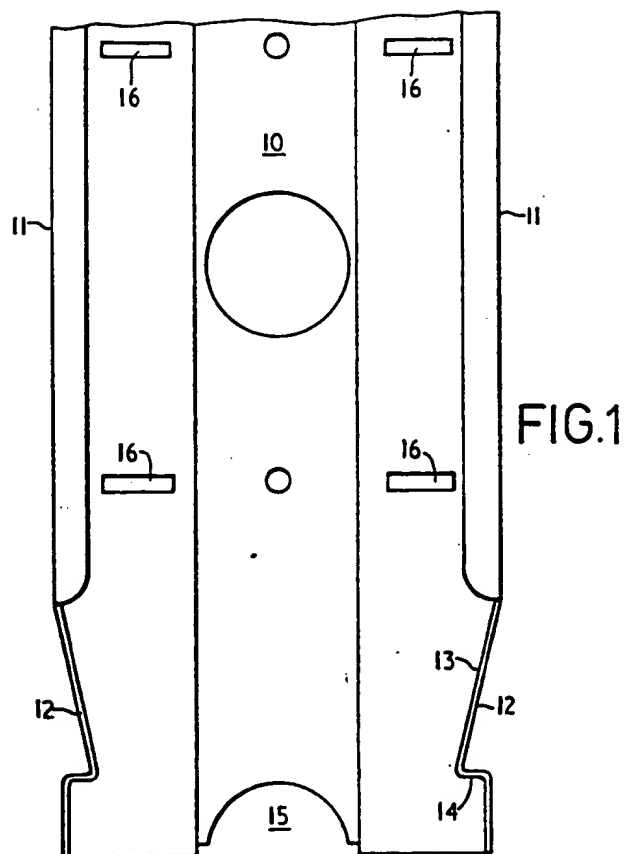


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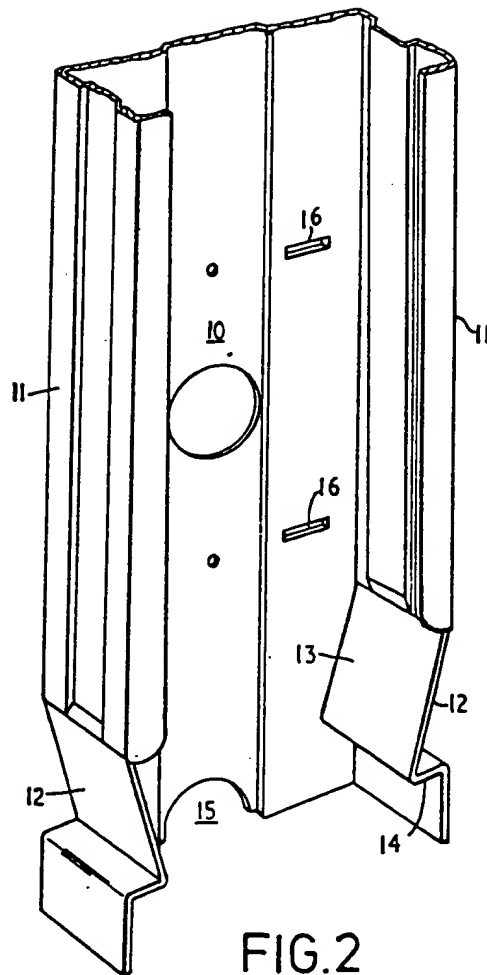


FIG. 2